We claim:

1. A continuously operated process for the purification by distillation of the methanol used as solvent in the synthesis of propylene oxide by reaction of a hydroperoxide with propylene, with the methoxypropanols as azeotrope with water and the low boilers and high boilers simultaneously being separated off, wherein the solvent mixture obtained in the synthesis is fractionated in a dividing wall column.

2. The process as claimed in claim 1, wherein the dividing wall column has two side offtakes and methanol is taken off as an intermediate-boiling fraction from one of the side offtakes and the methoxypropanols are taken off as azeotrope with water as the other intermediate-boiling fraction from the second side offtake.

3. The process as claimed in claim 1 or 2, wherein the dividing wall column has from 15 to 60 theoretical plates.

4. The process as claimed in any of claims 1 to 3, wherein the pressure in the distillation is from 0.5 to 15 bar and the distillation temperature is from 30 to 140°C, with the pressure being measured at the top of the column and the temperature being measured at the side offtakes.

5. The process as claimed in any of claims 1 to 4, wherein the dividing wall column is configured as thermally coupled columns.

6. The process as claimed in claim 5, wherein three thermally coupled columns are connected in series and the mixture to be fractionated is fed into the first column from which the low boilers are separated off, the methanol is taken off via the side offtake of the second column and the methoxypropanols as azeotrope with water are taken off via the side offtake of the third column from which the high boilers are taken off as bottoms, or

   two columns are each coupled with the column via which the mixture to be fractionated is fed in, with the low boilers being separated off at the top and the methanol being separated off at the bottom of one column and the methoxypropanols as azeotrope with water being separated off at the top and the high boilers being separated off at the bottom of the other column, or

the column via which the mixture to be fractionated is fed in is coupled with a dividing wall column having a side offtake, with the low boilers being separated off via the top of the feed column, the methanol being separated off at the top, the methoxypropanols as azeotrope with water being separated off at the side offtake and the high boilers being separated off at the bottom of the dividing wall column.

7. The process as claimed in claim 5 or 6, wherein the liquid stream taken from the bottom of one of the coupled columns is partly or completely vaporized before it is passed to the other column, and the gaseous stream taken off at the top of one of the coupled columns is partly or completely condensed before it is passed to the other column.

8. The process as claimed in claim 5 or 6, wherein the stream taken from the bottom of one of the coupled columns is partly or completely vaporized before it is passed to the other column, or the stream taken off at the top of one of the coupled columns is partly or completely condensed before it is passed to the other column.

9. The process as claimed in any of claims 1 to 8, wherein the propylene oxide is prepared by a process comprising at least the steps (i) to (iii):

(i) reaction of the hydroperoxide with propylene,
(ii) separation of the unreacted hydroperoxide from the mixture resulting from step (i),
(iii) reaction of the hydroperoxide which has been separated off in step (ii) with propylene,

with an isothermal fixed-bed reactor being used in step (i), an adiabatic fixed-bed reactor being used in step (iii), a separation apparatus being used in step (ii) and hydrogen peroxide being used as hydroperoxide and the organic compound being brought into contact with a heterogeneous catalyst during the reaction.

10. The process as claimed in claim 9, wherein the heterogeneous catalyst comprises the zeolite TS-1.